

Peshtigo River State Forest

DRAFT Regional and Property Analysis



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Introduction

The purpose of the Regional and Property Analysis is to provide background information for the Peshtigo River State Forest (PRSF) and the surrounding region. These analyses are important for developing informed alternatives in the master planning process while at the same time providing a broader context in which to place the Peshtigo River State Forest. Master planning for the forest goes beyond forest management and spans a wide range of issues, forest uses, recreational opportunities and forest management practices that are both sustainable and beneficial to natural communities and sensitive to local and regional economies. The Regional Analysis helps to identify the opportunities and limitations of the property and what niche the property occupies in a regional setting.

Property and Regional Scale

In order to assess the ecological, social, recreational and economic significance of the PRSF, it was necessary for this analysis to be conducted at several scales, appropriate to the specific topic or topics of interest. This approach was necessary to utilize the best available data, which was often available from previously conducted studies applicable to the general area of the PRSF, but conducted using differing study areas. This type of analysis combining multiple data sources at different scales has advantages and disadvantages. On the positive side, it allows for the assessment of social, economic and ecological context and interactions, at the scale for which each can be assessed. However, it can be problematic in some cases to identify linkages and interactions in complex systems, when the study areas do not coincide directly.

Therefore there is no defined “region” for this analysis. Rather the “region” shifts depending on the particular focus of each item being described. Some of the “regions” used include the Upper Great Lakes states, the State of Wisconsin as a whole, the surrounding counties of the property, the Ecological Landscapes as defined by the DNR, The National Hierarchical Framework of Ecological Units (NHFEU) designated sections, subsections and landtype associations, the county of Marinette as a whole, the PRSF as a whole, and sections within the PRSF.

Existing Assessment Reports

A widely varied set of resources were used for this analysis. In order to assess the recreational resources, the Statewide Comprehensive Outdoor Recreation Plan’s (SCORP) Upper lake Michigan Coastal designation was used, although this was modified depending on whether or not the regional designation was appropriate. The Upper Lake Michigan Coastal Region includes the counties of: Brown, Door, Kewaunee, Manitowoc, Marquette and Oconto. Also, the WPSC’s Recreation Plan for the Peshtigo River Projects (WPSC 1998) was referenced. For ecological analysis, The Biotic Inventory and Analysis of the Peshtigo River State Forest: Final Report (WDNR 2006), The Natural Heritage Inventory (WDNR), WPSC’s Comprehensive Land and Wildlife Plan (WPSC 1998), The Strategy for Wildlife Species of Greatest Conservation Need: Wisconsin (WDNR 2005), The Ecological Landscapes of Wisconsin (WDNR), Wisconsin’s Biodiversity as a Management Issue (WDNR 1995), and many other sources listed in the bibliography were utilized. Analyses reflect the best available data at the time the report was written.

I. Property Analysis

A. Property Description

1. The Property

The Peshtigo River State Forest (PRSF) lies approximately 20 miles northwest of Crivitz, Wisconsin in central Marinette County. The Potato Rapids portion of the property – 20 miles to the southeast of the rest of the forest - is approximately three miles north of the town of Peshtigo (Map 3.5 – Regional Ownership). Established in 2001, the PRSF is the smallest of Wisconsin's northern state forests, comprising 9,200 acres. Bordering the newly-created Governor Thompson State Park, the property is long and linear in shape, and surrounds the Peshtigo River and associated flowages from Roaring Rapids to an area northwest of the Sandstone Flowage. The property borders approximately 25 miles of the Peshtigo River including: Caldron Falls Flowage, a 1,180-acre reservoir; High Falls Flowage, a 1,670-acre reservoir; Johnson Falls Flowage, a 158-acre reservoir; the Fly Fishing Stretch of the Peshtigo River; and Potato Rapids Flowage, a 281-acre reservoir located XX miles downstream (See Map 3.1: Property Base Map).

Located in an area with abundant publicly owned lands including County Forest lands, the Nicolet National Forest, and the Governor Tommy G. Thompson Centennial State Park (GTTSP), the PRSF is an excellent addition to the regional amenity base (see Map 3.2: Ownership and Management). Wisconsin Public Service Corporation (WPSC), a natural gas and electric utility was the former owner of the property and still maintains ownership of property adjacent to PRSF, most notably along High Falls flowage and Caldron Falls. Private landholdings are scattered along the current forest boundary.

The Peshtigo River has been identified as a Land Legacy Place by the Wisconsin Land Legacy Report (WDNR 2006). The Land Legacy Report identifies the places most important to meet Wisconsin's conservation and recreation needs over the next 50 years.

2. Past Management and Use

Roth (1898) noted that southwestern portion of Marinette County had extensive tracts of jack pine, and that pine (white and red) had been cut over much of the county at that time. He also noted that "large burned over wastes" existed throughout the county. The area that is now the Potato Rapids section of the PRSF was within the area that was burned over in the Great Peshtigo Fire in 1871.

The area that is now the PRSF was heavily logged during the cutover period of the state, from the late 1800s into the early part of the 1900s. After the logging and subsequent fires, an even-aged forest of early successional species was established. Management was minimal through the 1950's, although some logging and small scale disturbance did occur. Starting in the 1950's, and continuing into the 1970's, approximately 1400 acres of the property were planted to red pine. Some harvesting occurred in the 1970's and 1980's, regenerating some of the early successional types in even-aged stands. According to the WPSC Comprehensive Land and Wildlife Plan, the existing stands of northern hardwood types originated between 1920 and 1940.

Since construction in 1910, The Peshtigo River Hydroelectric Projects (consisting of Caldron Falls, High Falls, Johnson Falls, Sandstone Rapids, Peshtigo River and Potato Rapids Projects), was owned and managed by WPSC, or its' predecessor companies. Since the 1950s, it was managed under a "wild shores philosophy" starting when the first access roads and boat landings were built. This promoted multiple uses, but restricted shoreline uses to "keep it close to a natural state".

During the tenure of WPSC, the land was open to the public for recreation. The WDNR will continue to promote public recreation on these properties while protecting natural features. An integrated management plan will address such issues as sustainable forestry, wildlife, fish and non-game management as well as the development of recreational activities such as hunting, snowmobiling, hiking, and cross county skiing that are well established in the PRSF.

The WDNR anticipates continuing current leases on the property with Marinette County for operation of Twin Bridge County Park and with the Town of Stephenson for the town park on Boat Landing Three Road. The boat landings currently operated by WPSC will remain open for public access.

3. Current Use

The property is currently used for a wide range of recreational activities and commercial timber harvesting. As previously noted, a public use precedent has already been established for the property and will largely be maintained by the WDNR. Firewood removal is also currently permitted. These traditional uses of the property make it difficult to significantly alter uses including forest management practices. Currently, as with many areas in the northern part of the state, population, road density, and housing density are relatively low at this time, although on a percentage basis, population density has increased in recent years¹.

B. Physical Environment

Landscape Classification

The most widely used landscape classification scheme is the U.S. Forest Services *National Hierarchical Framework of Ecological Units* (NHFEU)¹⁴. This system divides North America into four ecosystem *Domains*; each Domain is further divided into *Divisions*, *Provinces*, *Sections*, *Subsections*, and *Landtype Associations* (LTAs). Finer divisions have been developed for local use, sometimes at the individual property level (e.g., for the Chequamegon-Nicolet National Forest). To meet its own administrative and management needs, the WDNR has developed another level of classification, called an *Ecological Landscape*, between the Section and Subsection levels. WDNR's Ecological Landscapes are aggregations of Subsections that are taken directly from the NHFEU. Using NHFEU, the PRSF lies within the Section 212T (The Northern Great Lakes); Subsections 212Tc (The Athelstane Sandy Outwash and Moraines), 212Te (The Green Bay Sandy Lake Plain) and 212 Tb (The West Green Bay Till Plain); and

¹ Population changes for Marinette County can be found in the Regional Analysis of this chapter. Detailed information for Marinette County can be found in the *Marinette County Workforce Profile* (Wisconsin Department of Workforce Development, 2004).

¹⁴ Bailey, 1995 and Keys, 1995

LTAs Marinette Plains, Mountain Moraines, Coleman Drumlins, Butler Plains, Waupee Knolls, Mount Tom Moraines, and The Crivitz Plains. It lies within the Northeast Sands and Northern Lake Michigan Coastal Ecological Landscapes (See Map 3.7: Regional Landscape Classifications).

1. Geology, Soils and Topography

The PRSF and surrounding areas are underlain by igneous, metamorphic, and volcanic rocks, with the exception of the area surrounding Potato Rapids that is underlain by carbonates. Igneous and metamorphic bedrock exposures are common throughout the PRSF and surrounding landscape. The PRSF, like the rest of the Athelstane Sandy Outwash and Moraines Subsection, formed under the center of the Green Bay Lobe during the latter part of the Wisconsin glaciation and was overwashed and reworked by outflow from the Langlade Lobe. The thickness of glacial drift over the bedrock varies from 0-100 feet deep. The thickest glacial drift deposits are found in the southern half of the forest (WDNR 1985). In some places, till is thin enough that bedrock characteristics directly affect vegetation and bedrock outcrops can be seen frequently throughout the forest, often forming ridges and knolls.

The surface of the Athelstane Sandy Outwash and Moraines subsection is predominantly outwash sand. Many parts of the outwash surface feature "collapsed" topography that formed when stranded blocks of glacial ice melted, and overlying outwash material collapsed into the depressions. Heads-of-outwash are distinctive landforms here; these hilly areas were formed at recessional positions of the Green Bay Lobe when ice was melting and thinning rapidly. In places where large amounts of sand and gravel were deposited atop the thin edge of the ice sheet, and when the ice melted, a head-of-outwash ridge remained².

The soils of much of the PRSF and surrounding areas are excessively drained and sandy. Common soils in the area of the PRSF are of the Menahga Association, with significant areas of Pence-Padus Association closer to the Forest County line. There are scattered areas of the following associations in the upper part of the study area delineated in the Biotic Inventory: Mancelona-Emmet-Menahga, and Sarona-Keweenaw. The main soil associations in the lower stretches of the Peshtigo River are Wainpola-Deford and Cunard-Emmet (USDA 1991). However, the Subsection also includes remnant loamy end moraines and ground moraines that were not completely buried by outwash materials. These areas are among the few in the immediate area that support mesic hemlock hardwood or northern hardwood forests. Kettle lakes are few. Most of the lowland soils are very poorly drained acid peats or non-acid mucks, and are currently occupied by bogs, sedge meadows, shrub swamps, and lowland forests.

C. Water Resources and Aquatic Habitats

1. Lakes and Streams

Large natural lakes are few in this area, although there are a few examples of undeveloped or nearly undeveloped natural lakes in or near the PRSF. High Falls (1,498 acres) and Caldron Falls (1,018 acres) and flowages are the second and third largest "lakes" respectfully within the Upper

² See Wisconsin Landtype Associations, 2005

Green Bay Basin. The largest lake, Lake Noquebay (2,049 acres) is located within 10 miles of the state forest. The significance of Caldron and High Falls flowages cannot be overstated. These water bodies are a huge draw for water-based recreational activities within the region. Potato Rapids has less motorized water recreation associated with it than the other flowages and a greater concentration of waterfowl hunting and fishing.

There are also numerous Class I, II, and III trout streams within the region and state forest that offer some of the State's best trout fishing.

D. Vegetation and Natural Communities

A variety of tools are available to land managers engaged in forest planning and management. Using multiple sources of data, managers are better able to assess site capabilities, identify ecological and silvicultural alternatives, predict the effectiveness of possible silvicultural treatments, evaluate feasible management alternatives, and choose appropriate management objectives. These tools are an integral part of the master planning process and are used for sound forest management. A description of each source is provided below:

- The General Land Office's Public Land Survey data (GLO PLS) was utilized to assess historic vegetation. These surveys conducted between the 1830s and 1870s, divided the state into 6 by 6 mile townships and 1 by 1 mile sections so that the land could be homesteaded. In order to mark the corners of each section, the surveyors blazed up to 4 witness trees around the corner, and noted tree species, diameter, and distance and direction from the corner post. While the intent of these surveys was not ecological in nature, it does provide researchers with some ecological data about species composition and tree density at the time of the surveys.
- WISCLAND land use/land cover data are a source of generalized information on vegetation. These data were developed by the WDNR with support from a consortium of other users. The data are an interpretation of the state's land cover from LANDSAT satellite images taken in 1992. This vegetation classification provides non-detailed information on several categories of forested and nonforested land.
- Wisconsin DNR forest reconnaissance provides data at the stand level and current composition, but does not provide data on successional trends.
- Forest Inventory and Analysis (FIA) data are primarily used to assess the timber resource. The FIA uses statistical sampling at selected plots. These are the most accurate data for showing amounts (acreage and volume) of different forest types at the county level or a larger area. The data are not presented spatially, although information from sample points has occasionally been extrapolated to produce forest type maps.
- The forest habitat type classification system (FHTCS)⁷, The FHTCS identifies potential climax associations based on repeating patterns in the composition of the understory vegetation and different understory species. Individual forest cover types usually encompass a wide range of environmental conditions and do not accurately reflect site potential or respond predictably to given management techniques.

⁷ See *A Guide to Forest Communities and Habitat Types of Northern Wisconsin* (2002) by Kotar.

- Natural Heritage Inventory (NHI)⁸ The NHI programs focus on rare plant and animal species, natural communities, and other natural features. The Wisconsin NHI Working List is the official list of Endangered, Threatened, and Special Concern plants and animals for Wisconsin. The Working List also includes a list of natural communities known to occur in Wisconsin. The list changes over time as the populations of species change, and as knowledge about species status and distribution increases.
- The Forest Habitat Type Classification System (FHTCS) is a site classification system based on the identification of repeatable patterns in the composition of the understory vegetation. Identification of a habitat type provides a convenient label for a given site, and places the site in context of a larger group of sites that share similar ecological traits (Kotar et al, 2002).

1. Historic Vegetation

Based on Finley's (1976) interpretation of the GLO PLS records, the lands comprising the PRSF and surrounding landscape were vegetated with Pine or Oak Barrens, and interspersed with stands of lowland conifer forest and hemlock-dominated Mesic Forest. The northern stretches of the river that currently flow through portions of the Marinette County Forest were dominated by northern hardwoods, hemlock-hardwoods, and pine.

GLO PLS records indicate that much of the surrounding area was open with widely spaced trees that commonly included small diameter red pine (*Pinus resinosa*) and jack pine (*Pinus banksiana*). Aspen (*Populus tremuloides*) and tamarack (*Larix laricina*) were common in some areas. Fires were historically common in this landscape, owing to the dry sandy soils, fire-adapted vegetation, and the relatively level or rolling terrain which had few major water or wetland barriers.

2. Current Vegetation and Natural Communities

The PRSF and surrounding area are mostly forested. Deciduous forests (aspen, oaks, maples) are the most widespread, and are interspersed with small areas of upland and lowland conifer forests, wetlands and grasslands. Agricultural lands are common just south of the PRSF near the city of Crivitz (See Map 3.4: Property Land Cover).

Based on the most recent forest reconnaissance data for the PRSF³, aspen is the most common cover type, comprising 27% of the forest, followed by scrub oak (25%), red pine (11%), undifferentiated oak (9%), northern hardwoods (8%), and jack pine (4%). Swamp conifers and hardwoods, spruce-fir, and white pine cover types make up the remaining acreage. At that time, forests were mostly comprised of small size classes, including poles (83%) and saplings (16%); small and large sawtimber together made up 2% of the acreage of the larger forest size classes in the PRSF are limited mainly to the steep slopes adjacent to the Peshtigo River. These slopes support several distinct forest communities, and contain seeps that sometimes harbor rare plants and interesting plant assemblages.

⁸ The most recent NHI information for Wisconsin is available at (www.dnr.state.wi.us/org/land/er/).

³ Reconnaissance data is from 1989 but has been partially updated.

Using The Forest Habitat Type Classification System (FHTCS) the forest communities on the PRSF are as follows: PArV-Ao (*Pinus strobus*-*Acer rubrum*/*Vaccinium angustifolium*-*Apocynum androsaemifolium*), PArV-Po (*Pinus strobus*-*Acer rubrum*/*Vaccinium angustifolium*-*Polygonatum pubescens*), and AVb (*Acer saccharum*/*Viburnum acerifolium*). These communities are especially well-suited for management of pine (jack, red, and white), although red maple is well-represented in advanced regeneration. Red and white pines have the best growth potential, whereas red oak and red maple sawtimber is more modest. Pines are best suited for wood production, but the maintenance of deciduous tree populations is desirable for both wildlife habitat and soil nutrients.

3. Unique Habitats and Features

Key ecological features as identified by the Biotic Inventory include scattered outcroppings of igneous bedrock; small, remnant stands of the severely diminished Pine or Oak Barrens community; several floristically rich stands of Northern Wet-mesic Forest (White Cedar Swamps); and occurrences of older stands of Northern Dry-mesic Forest (white pine, red pine, red oak, red maple) on the steep slopes flanking the river.⁴

Other community types are also present, but are represented by stands that are too small, too highly disturbed, or too altered to warrant inclusion in the NHI database. The state rank of a community type or species refers to the number of occurrences found in the state and ranges from critical (S1) to relatively stable (S5)⁹. For example, the S3 ranking of the communities listed below indicates that they are rare or uncommon in Wisconsin. The table below summarizes the types of natural community occurrences on the PRSF.

Table 3.1: NHI natural community types within Peshtigo River State Forest

	Year	State Rank	Global Rank
Northern Dry-mesic Forest	2003	S3	G4
Northern Wet-mesic Forest	2003	S3S4	G3
Stream--Fast, Hard, Cold	2003	S4	GNR

Of those NHI community types found on the PRSF, The Ecological Landscapes of Wisconsin Handbook – Ecological Opportunities Table designates Northern Dry-mesic Forest, Northern Wet-mesic Forest and Coldwater Streams as Major Opportunities for the Northeast Sands Ecological Landscape. A major opportunity is defined as a community type that is represented by many significant occurrences within an Ecological Landscape (EL), or that the EL is appropriate for major restoration activities.

⁴ Community descriptions can be found in the Biotic Inventory and Analysis of the Peshtigo River State Forest (2006)

⁹ For more information on global and state ranking see
http://dnr.wi.gov/org/land/er/working_list/taxalists/key.htm#SRank

4. Threatened, Endangered and Special Concern Plant Species

Twelve rare plant species from the NHI Working List have been documented in or around the PRSF, including one State Threatened species, dwarf milkweed (*Asclepias ovalifolia*). One species that was known only from historical records, blue ridge blueberry (*Vaccinium pallidum*), was also found. Most of the rare plants found within the PRSF and adjacent areas are associated with either dry uplands (including barrens remnants, dry forests, and bedrock glades) or wetlands, both forested and open types. Three of the 12 species are associated with Northern Dry-mesic and Northern Mesic forests.

Table 3.2: NHI Working List plants in PRSF and surrounding area

Scientific Name	Common Name	Year	State Rank	Global Rank	State Status
<i>Arabis missouriensis</i> var. <i>deamii</i>	Deam's Rockcress	2003	S2	G4G5QT3?Q	SC
<i>Arethusa bulbosa</i>	Swamp-pink	*	1991 S3	G4	SC
<i>Asclepias ovalifolia</i>	Dwarf Milkweed	2003	S3	G5?	THR
<i>Carex assiniboinensis</i> **	Assiniboine Sedge	*	1981 S3	G4G5	SC
<i>Carex vaginata</i>	Sheathed Sedge	*	2003 S3	G5	SC
<i>Cypripedium reginae</i>	Showy Lady's-slipper	*	2003 S3	G4	SC
<i>Epilobium palustre</i> **	Marsh Willow-herb	*	2003 S3	G5	SC
<i>Malaxis monophyllos</i> var. <i>brachypoda</i>	var. White Adder's-mouth	*	1992 S3	G4Q	SC
<i>Medeola virginiana</i>	Indian Cucumber-root	1997	S3	G5	SC
<i>Platanthera hookeri</i> **	Hooker Orchis	1960	S2S3	G5	SC
<i>Platanthera orbiculata</i>	Large Roundleaf Orchid	2003	S3	G5?	SC
<i>Vaccinium pallidum</i>	Blue Ridge Blueberry	2003	S1	G5	SC

* Species associated with wetlands or aquatic features

** Species not located within the Peshtigo River State Forest

5. Threats to Natural Communities, Aquatic Systems, and Rare Species

Rare species and high quality natural communities occur on the PRSF and in surrounding areas. However, there are threats to the species and important habitats of this area. Although not an exhaustive list, a few examples of threats relevant to the PRSF are described below. Avoiding, eliminating, or in some cases, reversing these threats will play a key role in conserving the biological diversity of this landscape¹⁰.

Invasive Species

As of this writing, some of the invasive plants that have been problematic in other parts of the state, such as garlic mustard (*Allaria petiolata*), are not yet established in the PRSF. However, there are invasive species of concern, such as spotted knapweed (*Centaurea maculosa*), that have been observed in the PRSF and at nearby GTTSP. Other invasive plant species that were observed during this project included exotic yellow (*Hieracium kalmii*) and orange hawkweeds (*Hieracium aurantiacum*), white (*Melilotus alba*) and yellow sweet clovers (*Melilotus officinalis*), butter and eggs (*Linaria vulgaris*), bird's-foot trefoil (*Lotus corniculata*), and crown vetch (*Coronilla varia*). Leafy spurge (*Euphorbia escula*) has been found in the Governor

¹⁰ These concepts are discussed in many sources, including; Wisconsin's Biodiversity as a Management Issue (<http://dnr.wi.gov/org/land/er/biodiversity/report.htm>)

Thompson State Park and has the potential to become a serious problem throughout the area. Invasive species of concern for conifer swamps include glossy buckthorn (*Rhamnus frangula*) and Eurasian marsh thistle (*Cirsium palustre*). Open wetlands may be affected by purple loosestrife (*Lythrum salicaria*) and reed canary grass (*Phalaris arundinacea*). Glossy buckthorn is an established pest at Peshtigo Harbor on the lower river, and could become established in wetland communities in the PRSF. The flowages may be subject to the introduction of Eurasian milfoil (*Myriophyllum spicatum*) and other aquatic invasive plants, or by animals such as the rusty crayfish (*Orconectes rusticus*) as result of heavy recreational use.

All of these species, whether terrestrial or aquatic, have the potential to out-compete and displace native species, leading to ecological simplification and habitat loss. Management techniques should be designed to minimize the spread of invasive species wherever possible. Controlling outbreaks while they are small and localized, especially in ecologically important areas, appears to be the best strategy. Control measures will need to be implemented, wherever possible, to avoid major infestations such as those that now occur in many other parts of the state.

Ecological Simplification and Habitat Loss

In many areas throughout the state, dry forest and barrens communities have been replaced by planted stands that emphasize a single desired species, usually red pine. Converting more complex natural communities to plantations can eliminate or drastically reduce habitat for many native species, both rare and common. Such modifications greatly simplify community structure and composition. Chemical treatments sometimes used in the site preparation process may negatively affect or eradicate sensitive native and/or rare plants or the host plants needed by rare animals. Fire suppression policies have protected human life and property, but have also made it difficult to regenerate some tree species (e.g., oaks and jack pine) and maintain the full complement of light-demanding plants and animals native to this landscape.

Because of the potential impacts of plantations on natural biological diversity, it will be important to consider: 1) the locations of rare species occurrences, 2) landscape vegetation patterns, and 3) the overall distribution of plants and animals that contribute to the area's biodiversity when considering citing of plantations on the PRSF. There will be many areas where this type of management should be avoided.

Another way ecological simplification may be a threat in this landscape includes deer browse. Excessive herbivory by high populations of deer can inhibit reproduction of certain trees, especially those species that are preferred forage for herbivores. Heavy herbivory can also subject herbs and shrubs to pressures they cannot withstand, resulting in loss of vigor or population size. It is well-established that cedar swamps are known to be negatively affected by excessive deer browse, and cedar regeneration is now severely limited in most conifer swamps throughout the state. In addition to controlling deer densities, the mosaic of vegetation types surrounding the cedar-dominated conifer swamps should be assessed to try to limit negative impacts such as excessive deer browse.

On the PRSF, as in many locations in the region and throughout the state, there is a lack of older forest, as well as the large habitat patches needed to sustain certain species and ecological processes. Preventing ecological simplification and habitat loss for some species may require active management strategies such as: 1) preventing access by recreation vehicles to certain

areas, 2) prescribed burning techniques, 3) establishing special designations in particular areas, and 4) landscape-level planning (treating on a stand level but managing for the entire landscape).

E. Wildlife Resources

The property supports a healthy and diverse wildlife population that includes eagles, osprey, deer and bear. There are numerous aquatic species associated with the river and its associated wetlands, including the northern clearwater crayfish (*Oronectes propinquus*), bullfrog (*Rana catesbeiana*), and wood turtle (*Clemmys insculpta*). According to the Wisconsin Breeding Bird Atlas, 99 different species of birds are either confirmed to be breeding or probable to be breeding in the three 7.5 minute USGS topographic quadrangles that encompass the PRSF.

High deer densities are well-documented in the state and present many risks to the long-term health of northern forests. Pre-European settlement deer densities in northern Wisconsin were thought to range between 5 and 10 deer per square mile (Alverson *et al.*, 1988). Of late, higher densities in the region have led to severe damage to understory plants, tree reproduction, and a reduction in the habitat for birds and small mammals. Managing deer numbers will be important to achieving forest management objectives.

F. Threatened, Endangered and Special Concern Species

Eighteen rare animal species have been documented in the PRSF, including one State Endangered, three State Threatened species, and the Federally Threatened Bald Eagle (Table 3.3). A timber wolf pack – listed as Federally Endangered - is known on the northern portion of the Biotic Inventory's study area, and there is another known occurrence just outside the northern end of the forest¹¹. The majority of rare animals documented within the Biotic Inventory's study area are associated with aquatic or wetland habitats. The Peshtigo River provides important habitat for many of these species including five that are globally rare. The dry uplands are also important for some species including a rare tiger beetle (*Cicindela patruela patruela*). Only one nest territory for the northern goshawk (*Accipiter gentilis*) was located on the PRSF. The property lacks large tracts of mature, closed-canopy forest needed to sustain this and other rare birds, including the red-shouldered hawk (*Buteo lineatus*). However, there are areas on the forest that could provide future opportunities to benefit these species.

¹¹ For more information on timber wolves in Wisconsin see: dnr.wi.gov/org/land/er/mammals/wolf/

Table 3.3: NHI Working List Animals found in the PRSF and adjacent areas

Scientific Name	Common Name	Year	State Rank	Global Rank	State Status	Federal Status
Beetle						
<i>Cicindela patruela patruela</i> **	A Tiger Beetle	2002	S2	G3T3	SC/N	
Bird						
<i>Accipiter gentiles</i>	Northern Goshawk	2002	S2B,S2N	G5	SC/M	
<i>Haliaeetus leucocephalus</i>	Bald Eagle	*	2002 S3B	G4	SC/FL	LT, PD
<i>Pandion haliaetus</i>	Osprey		S3S4B	G5	Thr	
Butterfly						
<i>Pieris virginiensis</i> **	West Virginia White	*	2002 S3	G3G4	SC/N	
Crustacean						
<i>Oronectes propinquus</i>	Northern Clearwater Crayfish		SU	G5	SC/N	
Dragonfly						
<i>Gomphurus lineatifrons</i>	Splendid Clubtail	*	1991 S3	G4	SC/N	
<i>Gomphurus ventricosus</i> **	Skillet Clubtail	*	2002 S3	G3	SC/N	
<i>Gomphus quadricolor</i>	Rapids Clubtail		S4	G3G4	SC/N	
<i>Gomphus viridifrons</i>	Green-faced Clubtail		S3	G3	SC/N	
<i>Nasiaeschna pentacantha</i>	Cyrano Darner	*	1988 S3	G5	SC/N	
<i>Neurocordulia yamaskanensis</i>	Stygian Shawdowfly		S3	G5	SC/N	
<i>Ophiogomphus anomalus</i>	Extra-striped Snaketail		S1	G3	END	
<i>Ophiogomphus carolus</i>	Riffle Snaketail	*	1980 S3	G5	SC/N	
<i>Ophiogomphus howei</i>	Pygmy Snaketial		S3	G3	THR	
Frog						
<i>Rana catesbeiana</i>	Bullfrog	*	2003 S3	G5	SC/H	
Salamander						
<i>Hemidactylium scutatum</i> **	Four-toed Salamander	*	2003 S3	G5	SC/H	
Turtle						
<i>Clemmys insculpta</i>	Wood Turtle	*	2003 S3	G4	THR	
<i>Emydoidea blandingii</i> **	Blanding's Turtle	*	2002 S3	G4	THR	

** Not found on the Peshtigo River State Forest.

The Strategy for Wildlife Species of Greatest Conservation Need: Wisconsin (Formerly the CWCP) designates species of greatest conservation need based on several factors, and classifies them on their likelihood of occurring in a given Ecological Landscape (please refer to The Strategy for more information). Given the natural community types listed as occurring in the PRSF from the Biotic Inventory, Table 3.X lists the animals with a high or moderate probability of occurring in the Northeast Sands, and are associated with community types designated as Major Opportunities that occur in the PRSF.

Table 3.4: Species of Greatest Conservation Need and associated Natural Communities in the Northeast Sands Ecological Landscape

	Associated Natural Community types that occur in the PRSF	Species with a high probability of occurring in the Northeast Sands	Species with a moderate probability of occurring in the Northeast Sands
Major Opportunities	Northern Dry-mesic Forest	Whip-or-will Least Flycatcher Veery Golden-winged Warbler	Northern Goshawk Red-shouldered Hawk Canada Warbler Gray Wolf
	Northern Wet-mesic Forest	Water Shrew Northern Flying Squirrel Wood Turtle	Canada Warbler Four-toed Salamander Pickerel Frog Woodland Jumping Mouse Gray Wolf
	Coldwater Streams	Water Shrew Mudpuppy Mink Frog Wood Turtle	Solitary Sandpiper Four-toed Salamander Pickerel Frog Blanding's Turtle

Due to the fact that the NHI Working List and the Species of Greatest Conservation Need use different criteria to designate the status of species, it is unclear as to whether certain species occur within the PRSF. Therefore a lack of notation by the Biotic Inventory (Table 3.3) does not mean that a particular species does not occur in the PRSF, and inclusion in Table 3.4 does not mean that a particular species does occur in the PRSF. Rather, managers should be cognizant that healthy natural communities support a wide variety of different species, and maintenance of healthy natural communities may encourage the success of many species.

G. Recreation Facilities and Use

1. Existing Facilities

While the forest supports a wide range of recreational activities, it has surprisingly few designated facilities and trails. Trails are designated for mixed-use including hiking, off-road cycling, cross-county skiing and snowmobiling, to name a few. There are no ATV trails on the property, but extensive ATV trails exist to the north and south.

There are a wide range of authorized recreational activities on the PRSF. Many are seasonal, such as snowshoeing and berry-picking, but other activities, like hiking and wild-life watching can be enjoyed all year. The following list of authorized activities provides an overview of the recreational opportunities found on the PRSF: boating/jet skiing , cross-country skiing, snowmobiling, hiking, camping, off-road bicycling, snowshoeing, canoing/kayaking, berry picking, and swimming.

Camping

On the state forest, 62 campsites are located within the county-operated Twin Bridges Park on High Falls Flowage¹². There are currently 10 primitive remote canoe campsites located on 3 different areas on Johnson Falls, Seymour and Spring Rapids areas. These sites are accessible only by water, stays are limited to one night and they cannot be reserved. The WPSC did not designate any other primitive canoe campsites along this reach, but camping continues to occur.

Water Recreation

Due to the scarcity of large inland lakes in the region, the PRSF plays a major role in water recreation, as evidenced by the many boat landings on the property. Water recreation is supported by 16 boat landings with new cement planks (Table 3.5). The vehicle/trailer capacity of these boat landings ranges from 7-40, but most can accommodate approximately 20 vehicles/trailers.

Table 3.5: Boat landing capacity and amenities

Boat Landing Name	Cement Plank	Car / Trailer Capacity	Picnic Table	Boarding Dock
West Bay / #1	X	15		X
Bass Bay /#2	X	10		
East Bay /#3	X	20		
Twin /#4	X	20		
Channel /#5	X	20		X
Woods Creek /#6	X	30		X
Rock Cove /#7	X	40	X	X
Caldron Bay /#8	X	25	X	X
Musky Point /#9	X	30	X	
North Bay /#10	X	15		
Crandall Creek / #11	X	15		
Roaring Rapids / #12	X	20		
Thunder /#14	X	15		
Peshtigo / #1	X	7		
Potato Rapids / #1	X	15	X	X

Swimming is a very popular activity on the PRSF despite the lack of designated beaches. As a result, swimming often occurs on or near boat launches as well as other areas along the river. There are no designated swim areas owned and operated by the State Forest, however, the Town of Stephenson Park on High Falls Flowage does have a designated swimming area and other amenities.

Motorized recreational boating is more common on the flowages within the PRSF than on Potato Rapids, although canoeing/kayaking is popular in both areas. This may be due

¹² Twin Bridges County Park is located on the PRSF but is owned and operated by Marinette County.

to the small size of Potato Rapids and the lack of access points. Although it has two boat landings, Potato Rapids is not subject to the same recreational pressures seen on the other flowages. With only 288 acres of water and islands, this area is ideal for fishing, hunting, and canoeing.

Fishing

The upper reaches of the Peshtigo River are characterized by two flowages, Caldron Falls and High Falls. These flowages support a good fishery for muskellunge, walleye, bass and panfish. The forested shorelines feature numerous scenic rock outcrops and islands. The Johnson Falls Flowage lies downstream from High Falls Flowage and exhibits a narrower river channel, steeply wooded banks and an excellent fishery. The Fly Fishing Stretch of the Peshtigo River offers some of the most scenic trout fishing in the Midwest. The Potato Rapids Flowage near the city of Peshtigo is a scenic flowage with an associated marshland habitat that also supports a warm water fishery.

Trails

The PRSF has approximately 20 miles of snowmobile trails (which are also used by ATV's in winter), and approximately 8 miles of cross country ski trails. There are approximately 6 miles of designated public access roads, portions of which are used in winter for snowmobiling or skiing. There are currently no mountain bike, nature, or other types of trails designated on the property.

H. Social and Cultural Resources

1. Land Ownership

There are no private in-holdings within the property boundary, but much of the property is surrounded by private property, including a few large pieces retained by WPSC. This may pose difficulties for potential boundary expansion proposals and management decisions. There are also numerous public lands near the PRSF, including local, county, state and federal lands (see Map 3. 3 Regional Ownership). There are also no private land in-holdings at Potato Rapids, but it is largely surrounded by private property and as a result is more difficult.

2. Historical/Archeological

Work completed by WPSC for the Federal Energy and Regulatory Commission re-licensing program found evidence of historical and archaeological resources within the region. The WPSC identified eight previously recorded prehistoric and historic sites. Field reconnaissance found 55 sites along the shorelines, of which 22 are affected by either hydro project operations or public recreation. Most sites have late Woodland (Native American) components dating from A.D. 500 to 1634. The Johnson Falls, High Falls and Caldron Falls hydroelectric dams and powerhouses are eligible for inclusion into the National Register of historic places.

As part of the 1837 and 1842 treaties the Native Americans gave up timber harvesting rights. However, they retained the rights to such activities as hunting, fishing, as well as the gathering of firewood, boughs, tree bark, lodge poles, marsh hay, wild rice, and maple syrup. These activities are retained because it has been determined by the courts that they are usual and customary activities of the Chippewa at the time the treaties were signed.

I. Administrative and Other Facilities

There are currently no designated administrative or maintenance facilities on the forest, although there are plans to develop seasonal employee housing and administrative offices near the High Falls reservoir.

The forest has approximately 31 miles of maintained recreational trails and 2.6 miles of public access roads. These trails and roads will continue to be maintained by DNR for public use and recreational access.

II. Regional Analysis

A. Land Ownership and Land-Use Patterns

The 9,200 acre Peshtigo River State Forest is located in Marinette County (Map 3.5 – Regional Ownership). This area of northeastern Wisconsin is predominately rural with a natural resource and tourism based economy. This area supports a large natural amenity base that attracts many tourists and seasonal homeowners. The main body of the forest is near the City of Crivitz and about 55 miles north of Green Bay. The property resides almost entirely within the Township of Stephenson. A small portion of the state forest, Potato Rapids, is in the Town of Peshtigo.

Public Lands

Over 28% of Marinette County is under public ownership, with approximately 231,000 acres of county forests and parks and 15,000 acres of DNR managed land, including wildlife areas, wild river areas, fisheries, state natural areas, and a state park. Non-profit conservation organizations and other public ownership account for the remaining 8,000 acres of recreational lands open to public use. There are 444 natural and man-made lakes in the county totaling 16,260 surface acres. There are very few large lakes (defined as greater than 50 acres) within Marinette County and surrounding region. Because of this, there is high demand for the sizable waters of the Peshtigo's flowages for recreation. This area is also known for its high concentration of trout streams (see Map 3.5: Regional Ownership).

Public lands are common in northeastern Wisconsin. The largest of these holdings are within federal and county forests, which comprise approximately 1 million acres of land. Listed below are the largest public land holdings within a 50 mile radius of the state forest (including Upper Michigan):

Wisconsin

- Marinette County Forests: 231,596 acres. Multiple recreational opportunities exist on these lands from water access sites to developed campgrounds, including one campground within the state forest.
- Oconto County Forests: 41,980 acres with the majority abutting the Nicolet National Forest. Camping, fishing and water accesses are available within this forest.
- Florence County Forests: 36,363 acres. Hiking, snowmobiling, ATV, and canoeing are popular activities. The forest also has two public campgrounds.
- Forest County Forests: 10,808 acres. ATV, snowmobiling, hunting and wildlife viewing are promoted on these lands.
- Chequamegon-Nicolet National Forest: covers nearly 661,400 acres in Florence, Forest, Langlade, Oconto, Oneida, and Vilas counties. Abundant trail and camping opportunities exist upon this property.

- Governor Thompson State Park totals 4,135 acres. It abuts the state forest and lies on the Caldron Falls Reservoir. Currently under development, the park will offer family camping, indoor and outdoor group camps, environmental educational programs, and a trail network for biking, hiking and skiing.

Michigan

- Copper County State Forest: 430,000 acres over a seven county area. The southern fringe of this property (Dickinson County) abuts Marinette County. Wide ranges of motorized and non-motorized recreational activities occur on this property.
- Escanaba River State Forest: 416,000 acres. The southern fringe of this property (Dickinson County) also abuts Marinette County. The forest offers access to both Lake Michigan and other forestlands with camping, ATV, and non-motorized trail usage.

4. Regional Transportation Network

The state forest is located approximately 50 miles from Green Bay, 110 miles from Oshkosh, and 160 miles from Milwaukee. State Highways 141, 41, and US Interstate 43 provide easy and efficient access to the region and forest. A number of township roads provide access to the state forest. County Highways X, C and W provide the backbone for transportation to the property. The majority of these township roads are paved, although a few are gravel. Potato Rapids is accessible from State Highway 64 and numerous township roads.

B. Biological and Ecological Resources

1. Regional Geology and Soils

The PRSF and its surrounding region sit on the southern edge of the Precambrian Shield, often referred to as the Canadian Shield. It's an area of vast igneous, metamorphic and sedimentary bedrock that covers most of northern Wisconsin, northern Minnesota, Michigan's Upper Peninsula and nearly all of central and eastern Canada. However, unlike the dominantly rocky landscape of Northern Minnesota and Canada, only occasional granite outcrops and knobs are visible here along rivers, streams, and other select locations. This southern edge of the shield is buried under 100 feet of glacial till and ground moraine derived from granite and locally abundant dolomite from formations miles to the east (see Map3.8: Regional LandType Associations).

Glacial deposits in the region of the state forest include north-south terminal moraines, ground moraine, lake sediments from Glacial Lake Michigan, pitted and unpitted outwash, and sand dunes. Soils on the outwash plains area are excessively well-drained sands, while somewhat richer sandy loams and loamy sands dominate the moraines. This is reflected in the high level of soil permeability for most upland soils here, generally in the range of 2.5 to 5.0 inches per hour. For comparison, soils formed from the glacial lake sediments near the city of Peshtigo have higher clay content and a permeability rate of only 0.8 to 0.05 inches per hour.

In Marinette County, the majority of the soils (68 %) were formed in glacial outwash and till. As such, they created a complex topography of well drained soils interspersed with pockets of poorly drained soils. Slopes vary from 0 to about 30 %. Looking more closely at the PRSF, more than three-quarters of the soils of the state forest and surrounding lands are strongly associated with the drought and fire adapted Pine or Oak Barrens natural communities (the Menahga and Mancelona-Emmet-Menahga soil associations).

Most of the remaining soils in Marinette County are richer with more water holding capacity as they were formed in glacial till. The Northern Mesic Forest Plant community, which typically supports hemlock, white pine, sugar maple and red oak, is generally associated with this soil type. These areas are mostly located north of Caldron Falls Reservoir.

2. Ecological Setting and Capability

The majority of the PRSF is located in the Northeast Sands Ecological Landscape (See Map 3.7: Regional Landscape Classifications). From the NHFEU, the unit most relevant to the PRSF and surrounding lands is subsection 212Tc (Athelstane Sandy Outwash and Moraines). In the NHFEU, this Subsection is further divided into a number of Landtype Associations (LTAs). The LTAs that comprise Subsection 212Tc are differentiated primarily by their geomorphology. Morainal remnants and heads-of-outwash make up one group of LTAs, while outwash plain LTAs make up another, and a third group is formed in glacial lake plains.

According to the Ecological Landscapes of Wisconsin Handbook, the Northeast Sands Ecological Landscape was historically extensive oak/jack pine barrens and jack pine forests, found in the outwash sand portions of this Ecological Landscape. Moraines supported forests of hardwoods, red pine, and white pine. Outwash plains often contained pitted depressions, resulting in numerous wetlands and kettle lakes.

Most of the Northeast Sands is still forested (Figure 3.1); aspen predominates, followed by northern hardwoods. Jack pine remains on the outwash plains along with northern pin oak (scrub oak). There are several important occurrences of jack pine/oak barren communities, although there are none noted in the PRSF. A small percentage of this Ecological Landscape contains spruce-fir-cedar forest and lowland hardwood forest. The Brazeau Swamp, a Land Legacy Place directly south of the PRSF lying mostly within the Marinette County Forest, is one of the best representations of large cedar swamp forests in northern Wisconsin.

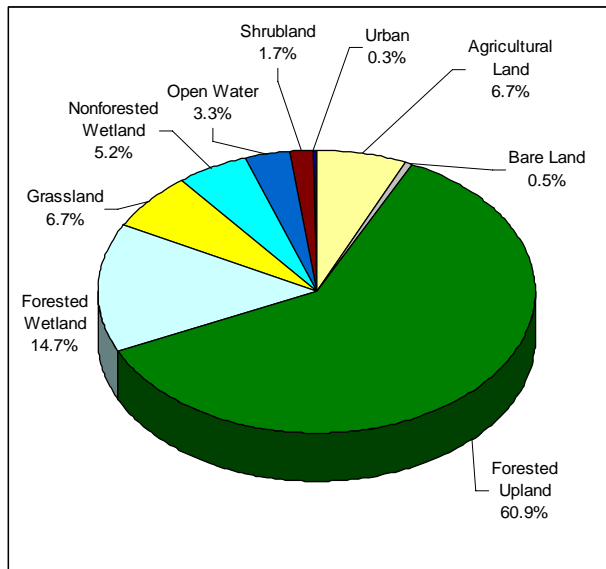
Table 3.X: NHI natural community types in areas adjacent to the Peshtigo River State Forest

	Year	State Rank	Global Rank
Bedrock Glade*	2003	S3	G2
Northern Dry-mesic Forest	2003	S3	G4
Northern Mesic Forest*	2003	S4	G4
Northern Wet Forest*	2003	S4	G4
Northern Wet-mesic Forest	2003	S3S4	G3
Open Bog*	2003	S4	G5
Southern Sedge Meadow*	2003	S3	G4
Stream--Fast, Hard, Cold	2003	S4	GNR

*Communities not found within the Peshtigo River State Forest

Of those NHI community types found in this area, The Ecological Landscapes of Wisconsin Handbook – Ecological Opportunities Table designates Northern Dry-mesic Forest, Northern Wet-mesic Forest and Coldwater Streams as Major Opportunities for the Northeast Sands Ecological Landscape, and designates Northern Mesic Forest, Northern Wet Forest, Bedrock Glade and Open Bog as Important Opportunities. A major opportunity is defined as a community type that is represented by many significant occurrences within an Ecological Landscape (EL), or that the EL is appropriate for major restoration activities. An important opportunity means that a community type is not extensive or common in an EL but has a minimum of one to several significant intact occurrences that should be considered for protection and/or management. Or it means that the natural community type is restricted to just one or a few Ecological Landscapes within the state and should be considered for management there because of limited geographic distribution and a lack of opportunities elsewhere.

Figure 3.1: Land Cover of the Northeast Sands Ecological Landscape (WISCLAND)



The Northeast Sands contains several important river systems (other than the Peshtigo) as well as extensive wetlands. The Menominee is the largest, located on the Michigan-Wisconsin border. Several wild rivers in the Landscape are the Wolf, Pine, Popple, and Pike. Extensive wetlands, including in the Peshtigo Brook State Wildlife Area, are found here. The Northeast Sands has high levels of watershed pollution, with three of five watersheds classified as highly polluted. Its lakes, though few, ranked second worst in pollution levels among all of the Ecological Landscapes.

The globally rare Pine and Oak Barrens were much more common in the region prior to European settlement. This savanna community is characterized by scattered jack pine or a mixture of scrub oak and white oak, interspersed with shrub-dominated openings.

Fire suppression has played a key role in its lack of reproduction in the area. Following fire suppression efforts of the mid-1930s, Pine and Oak Barrens almost entirely disappeared. Some stands have grown into dense, 40-50 foot tall stands of jack pine, or been clearcut and planted to red pine plantations. Still other stands with an aspen component were clearcut and have become nearly pure aspen, while other stands had jack pine harvested for pulp and are now dominated by scrub oak. In the absence of fire, most of these stands have been invaded by mesic species and are succeeding to dry-mesic or mesic forest. Red maple is often among the first mesic species to invade.

In contrast, Subsection 212Xc - which lies just a few miles to the northwest of the state forest - has much richer soils. As a result, the northern hardwood forests that have dominated the area since before European settlement can support larger components of white ash (*Fraxinus americana*), yellow birch (*Betula alleghenensis*), basswood (*Tilia americana*) and American elm (*Ulmus americana*). The better-drained depressions are dominated by balsam fir (*Abies balsamea*) and American elm. The poor-fens and bogs dominated by sedges, sphagnum mosses, tamarack, and black spruce (*Picea mariana*) are common in the poorer-drained depressions.

Another large area of richer soils, Subsection 212Tb, lies to the southwest of the outwash plain. The dominant pre-settlement vegetation here was northern hardwood forests of sugar maple (*Acer saccharum*), beech, hemlock (*Tsuga canadensis*), northern white cedar (*Thuja occidentalis*), and yellow birch. Much of these lands are now in agricultural use.

The Marinette County Forest is one of the largest public lands in the state. As this is a 'working forest', young and medium-aged forests - in a mosaic of relatively small patches - are well represented and provide ample habitat for those species associated with such vegetation. Older, less disturbed forests, especially in larger patches, are not well-represented even in the county parks. Detailed surveys of this property have not been conducted, but among the significant natural features identified are several outstanding aquatic features (including free-flowing stretches of the Peshtigo River and several of its tributaries), undisturbed wetlands, and relatively mature northern hardwoods and hemlock hardwoods forests with significant components of beech, hemlock, and locally, white (*Pinus strobus*) and red pines.

Peshtigo Harbor occupies a strategic location, situated at the junction of the Peshtigo River with Lake Michigan. The mouth of the Peshtigo River features an extensive complex of wetlands: marsh, meadow, shrub swamp, and lowland forest, that are of high significance to native plants and animals, including many rare species. The Peshtigo Harbor Unit of the Green Bay West Shores State Wildlife Area is just one in a system of important (ecology, economy, recreation, aesthetics) public holdings that occur along the West Shore of Green Bay. Additional survey work is needed for the entire complex of public lands along the West Shore.

In summary, the PRSF lies within a large landscape shaped by sandy soils and fire. The early vegetation of the region was a fairly open Pine or Oak Barrens community. Currently it's a rare community type in the region and state. Now that wildfires are largely controlled, the upland forest in this area is slowly converting to species more typical of richer soils, such as those found north of the PRSF. Another large area of richer soils lies a few miles to the south of the state forest and has now been largely converted to agricultural uses.

Recent History and Forest Succession in Marinette County

The upland forests of the PRSF area have undergone a great deal of change since European settlement. Areas with standing timber were logged off in roughly the same time period as the rest of northern Wisconsin in the last few decades of the 19th century. With fire suppression becoming successful in the 1930's, as well as the extensive planting of pine plantations on abandoned farms and in former Pine Barrens, Marinette County underwent a dramatic transformation. The USDA Forest Service began its' Forest Inventory and Analysis (FIA) program of thorough forest inventories in 1956 with plots scattered throughout each county. These plots allow estimates to be made of the forest cover larger areas (county wide, for example). Specific data for the state forest is not available, but the county data reflects the types of changes readily observable in the area. (Data supplied by WDNR Forest Statistician Vern Everson, 2002.)

These data show clearly the changes in forest composition in Marinette County over the last 40 years. Red pine has increased by a factor of 4, almost entirely as a result of red pine plantations. Aspen and oak have decreased in response to a strong increase in mesic hardwoods - maple, beech, and yellow birch. The amount of non-forested land in 1996 is 38 times less than that in 1956.

C. Recreational Resources

The PRSF is located in a popular outdoor recreation area in Northeastern Wisconsin. Recreational activities that occur on or near the state forest include fishing, boating, canoeing, kayaking, river rafting, swimming, water skiing, hiking, picnicking, camping, hunting, snowmobiling and cross country skiing.

The state forest and surrounding area offer a variety of scenic water features and views. Due to the undeveloped shoreline, many of these views can be enjoyed in a natural setting. The two large flowages provide grand vistas of open water while the lower sections provide more intimate views of the free flowing river.

As population increases and the number of seasonal housing units increase, there will be a greater demand for and on regional recreational opportunities. In the inland lakes area of Marinette and Oconto Counties, the Towns of Silver Cliff, Stephenson, and Townsend are projected to experience high growth in coming years. High recreation potential Land Legacy points in this area include the Peshtigo River and the Chequamegon-Nicolet National Forest.¹⁵ Recreational demand is expected to increase 6.8 % between 1990-2020¹⁶.

¹⁵ Wisconsin SCORP, 2005

¹⁶ Federal Energy Regulatory Commission (EIS), 1997

1. Land Based Recreation

Camping

Camping is a popular recreational activity within the region. There are some 2,400 campsites available within a 50 mile radius of the state forest. The majority of these sites are privately-owned with electric hook-ups. Most of the rustic camping opportunities can be found on municipal, county, state, and federal owned lands. These rustic sites make up about 22 % of the campsites in the region.

Table 3.6: Campsites within an approximate a 50-mile radius of the PRSF*

Regional Campgrounds	Sites With Electricity	Sites Without Electricity	Total	% of Total
Federal	22	193	215	9%
State	178	0	178	7%
County	272	140	412	17%
Municipal	230	0	230	10%
Private	1183	185	1368	57%
% Total	1885	518	2403	

* This does not include the Potato Rapids Unit

Within a 30 minute drive of the PRSF, there are a number of other public and private campgrounds. With the exception of the county operated Twin Bridges Campground, the seven public campgrounds near the forest are small (15-30 sites), rustic, and without electricity. There are five privately operated campgrounds within the area, ranging in size from 40 to 90 units. Most of these offer electric hook ups and pressurized water.

Hunting

Hunting is popular both in the region and on the PRSF, with abundant public hunting opportunities available on federal, state and county lands. Hunting includes deer, turkey, bear, fox, coyote and small game. There is some waterfowl hunting done on the flowages and area lakes.

Biking

Road

The roads in and around the state forest are mostly paved and in good condition for road biking. There is an established 24-mile loop from Crivitz that uses Parkway, Ranch and Caldron Falls roads, and Highway W. The Wisconsin State Bicycle map of this region does show County Highways A, C, X and W as good roads for cycling.

Off-road

Regionally, a number of off-road trails exist on federal and county forestlands along with Michigan and Wisconsin State Parks. A five mile paved bike trail will be built on the

GTTSP and there are some off-road biking opportunities on the forest although there are no designated trails.

Hiking

Regionally, over 70 km of designated hiking trails exist on the surrounding counties. All of these trails are located on public lands.

Skiing

Regionally, over 70 km of groomed trails exist in the surrounding counties. These trails are all located on public lands.

Horse

Regionally there are 34 miles of trails located on the Chequamegon-Nicolet National Forest.

Snowmobile

Snowmobiling is highly popular in the region with an extensive network of trails. Statewide, and within this region, land based motorized recreation continues to increase in demand. Due to the aging population (almost 1/2 of riders of snowmobiles and ATVs within the state are by persons over the age of 40) and aggressive marketing campaigns, ATV and snowmobile usage continues to gain in participation. Table 3.9 lists regional snowmobile trail miles.

Table 3.7: Miles of Regional Snowmobile Trails by County

County	Trail Miles
Oconto	431
Florence	130
Forest	375
Marinette	446
Total Miles of Snowmobile Trails	1382

All Terrain Vehicles

Regionally, over 400 miles of ATV trails exist, with some of these trails on designated roads. **Table 8** lists the total mileage and usage by county and **Map X** shows the extensive coverage of the network. There are also ATV's allowed in Michigan State Forests located in the Upper Peninsula. Currently there are no designated ATV trails on the PRSF, however the designated snowmobile trails are used in the winter by ATVs.

Table 3.8: Miles of ATV Trails by County

County	Year Round	Winter	Spring/Summer/Fall	Road/Route	Total
Marinette	155.51	0	0.99	101.06	137.61
Oconto	0	0	74	55.5	129.5
Florence	36.55	0	0	101.06	137.61
Forest	6.12	8.22	0	0	14.34
Total	198.18	8.22	74.99	257.62	419.06

Outdoor Education/Interpretation

There are limited education/interpretation opportunities within Marinette county. Four museums in the county cover topics from the Peshtigo fire to Menominee Indian logging camps. Within a larger context, the Nicolet National Forest Service does offer two 80 and 65 mile auto tours. There are also 10 interpretive trails within the national forest. There are very few, if any opportunities for guided interpretation within the region.

Adjacent to the forest the GTSP plan will provide an education/interpretation program. When park development is complete, the program will include a nature trail, observation tower, display kiosk, and interpretive center.

2. Waterbased Recreation**Swimming**

Clean water and numerous access points encourage swimming as a recreational activity on area flowages and lakes in the region. Swimming is the second most popular activity. The sand beaches and granite rock structures allow for varied swimming experiences. However, because of the physical nature of the flowages there are very few beaches. Most swimming occurs at the boat landings or County Parks. A beach will also be constructed in the GTSP on Huber Lake.

Fishing

Excellent fishing occurs in and around the state forest. Caldron Falls Reservoir supports a high quality muskellunge fishery and is the only Class A muskellunge waters in Marinette County. Currently 1,000 muskellunge fingerlings are stocked annually in the Caldron Falls reservoir. Other fishing opportunities in the Caldron Falls reservoir include largemouth bass, smallmouth bass, brown trout, bluegill, rock bass, yellow perch, black crappie and pumpkinseed.

High Falls flowage supports an excellent fishery of walleye, largemouth and smallmouth bass. Major panfish species include bluegill, rock bass, yellow perch, black crappie and pumpkinseed.

Johnson Falls Flowage also supports an excellent fishery. Principal gamefish include: northern pike, smallmouth bass, largemouth bass, walleye, muskellunge, brown trout, and rainbow trout. The most abundant panfish species are bluegill, rock bass, yellow perch, black crappie and pumpkinseed. Currently 1,000 - 2,000 rainbow trout are stocked annually in the Johnson Falls reservoir. Abundances of individual species are low and fishing pressure is light, but the reservoir produces some large fish desired by anglers.

Deer (Huber) and Woods Lakes located in the PRSF support a large mouth bass, northern pike, and pan fish fishery.

Regionally this area offers some of the best trout fishing within the State with numerous Class One Trout Streams. A special fly fishing only area is located on a section of the Peshtigo River within the Forest.

Canoeing / Kayaking / Rafting

Abundant whitewater and paddling opportunities exist on both the Peshtigo River and other surrounding rivers and streams.

There are two whitewater segments near the state forest. The Roaring Rapids section of the Peshtigo River just upstream of the forest offers the Midwest's longest continuous whitewater that is runnable most of the summer. This four mile long section offers class III-IV whitewater. Commercial rafting outfitters provide easy public access to this section with the take out for these trips at boat landing 12 - at the northern end of the PRSF property.

The other whitewater in the area is the Seymour Rapids river section just downstream of the Johnson Falls Dam. It runs from Johnson Falls Rd. to Kirby Lake Ln or Schaeffer Rd. This seven to eight mile section offers class I-III whitewater but is seldom run compared to other segments of the Peshtigo.

Regionally, the Brule, Pike, Pine, Popple and Menominee offer other whitewater boating opportunities. The Pike River in Marinette County is one of three state designated wild rivers in Wisconsin along with the Pine and Popple in Florence County.

The flowages and the lakes in the state forest area offer excellent white water paddling opportunities. Canoe travel time from boat landing 12 (on Caldron Falls Reservoir) to the Johnson Falls dam is approximately 11 hours. Marked portage routes exist around the dams. The two small lakes in the GTSP are designated non-motorized and offer additional paddling opportunities.

Power Boating

Power boating is a popular activity on both Caldron and High Falls flowages. Caldron Falls offers over five miles of boating opportunities while High Falls offers over seven miles. The dam prevents making continuous connections between the two by motorboat.

Larger watercraft are attracted to the large reservoirs. There are 19 rustic to semi-improved boat landings on Caldron and High Falls. Combined, they provide approximately 440 parking spaces. During summer weekends and holidays almost all these boat landings exceed their capacity. The one exception is Twin Bridges County Park where there is a \$2 daily or \$10 annual entrance fee.

On Caldron Falls, boat Landings 4 and 5 (Popp's and Channel Landing) are the busiest landings on the reservoir. New Boat Landing No. 3 (East Bay) is not often used because the prevailing winds make launching difficult.

Jet Ski

Jet skiing is common on both flowages. The existing launch sites allow for easy access. While not as popular as motor boating, there has been an increase in this activity.

D. Cultural Resources

The PRSF has been used for recreation and commercial timber harvest for many years and as a result has contributed greatly to the local and regional economies. In addition to this, the land and water are important to local users, both for recreation and as income derived from recreational use by non-local users. Because there is such a long history of public use, there is the potential for resistance by both local and non-local users as recreation and forest management objectives for the property change. The DNR is committed to involving the public in the planning process and keeping them apprised of any changes in either use or forest management.

As part of the 1837 and 1842 treaties the Native Americans gave up timber harvesting rights. However, they retained the rights to such activities as hunting, fishing, as well as the gathering of firewood, boughs, tree bark, lodge poles, marsh hay, wild rice, and maple syrup. These activities were retained because it has been determined by the courts that these are usual and customary activities of the Chippewa at the time the treaties were signed.

E. Socioeconomic Trends

Marinette County and the surrounding region are similar to other northern counties in demographic and economic trends¹³. The region is susceptible to seasonal variations in residents and economic stimuli, and is changing both demographically and economically. The population is becoming both more urban and older while the economy is shifting from resource extraction and manufacturing to a service-sector based economy.

1. Population Trends

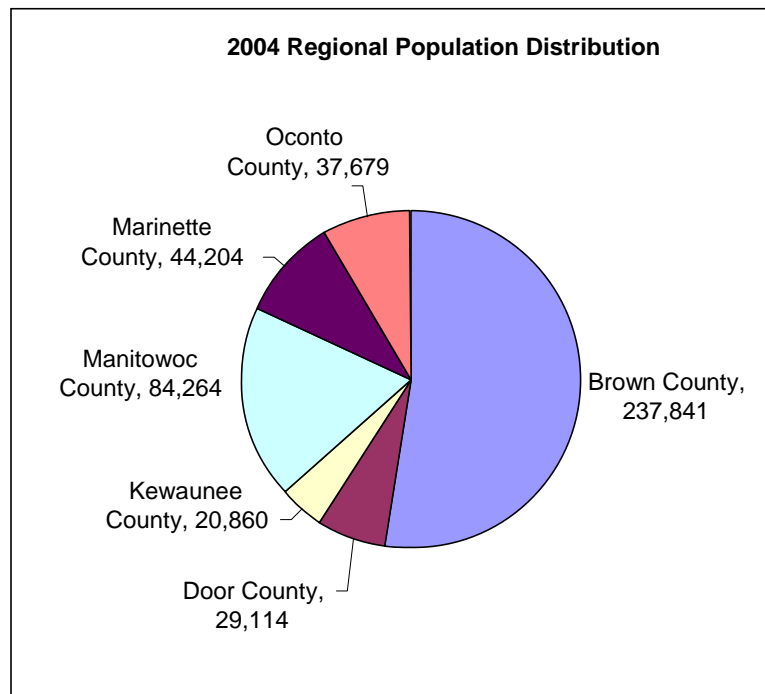
The population of Marinette County has experienced relatively stable growth during the 1990's. The current population of 43,417 has increased 7% since 1990. More than 25% of all residents reside within the City of Marinette. Surrounding counties have grown in the range of 5 to 10%. Statewide, population increased 9.6% during this same period (See Map 3.5: Regional Population)

Most of the PRSF is in the Town of Stephenson, which increased in population by 2% since 2000. There was a 34% increase in population between 1990 and 2000, mostly due to immigration. This increase accounted for the largest total person increase of any township within Marinette County.

2. Population Distribution

Population distribution and densities vary within the region, with a decrease in population from south to north. Figure 3.2 shows the regional population distribution.

¹³ See *Marinette County Workforce Profile* (Wisconsin Department of Workforce Development 2004), the Census Bureau (<http://www.census.gov/>), and Wisconsin SCORP Regional Demographic Profile (2005-20120).

Figure 3.2: Population density of counties surrounding the PRSF

With growing population densities in Green Bay and the Fox River Valley - and their relatively close proximity to the PRSF, this “northwoods” area will continue to be a strong attraction for recreation and second home development. The PRSF is more readily accessible from these population centers than most of the county and national forest lands.

Table 3.9: Population Projections for the Upper Lake Michigan Coastal Region

	Estimate 2004	Projection		Projected Increase		Average Annual % Increase	
		2010	2020	2004- 2010	2010- 2020	2004- 2010	2010- 2020
Brown County	237,841	248,529	269,812	10,688	21,283	0.75%	0.86%
Door County	29,114	30,112	30,800	998	688	0.57%	0.23%
Kewaunee County	20,860	21,343	22,457	483	1,114	0.39%	0.52%
Manitowoc County	84,264	86,307	89,860	2,043	3,553	0.40%	0.41%
Marinette County	44,204	44,557	45,251	353	694	0.13%	0.16%
Oconto County	37,679	39,670	43,018	1,991	3,348	0.88%	0.84%
Upper Lake MI Coastal Region	453,962	470,518	501,198	16,556	30,680	0.61%	0.65%

Source: Wisconsin SCORP Regional Demographic Profile for the Upper Lake Michigan Coastal Region

3. Seasonal Housing and Tourism

Area residents constitute much of the demand for outdoor recreation, but a certain amount of demand also comes from non-residents like seasonal home owners and tourists. Table 3.5 shows the increasing importance of seasonal housing and tourism in the region as well as the percent change of seasonal housing from 1960-2000. Approximately 10% of all housing is used for seasonal or recreational use compare to only 6.3 % for the state as a whole. Marinette County has a relatively high proportion of seasonal homes. In some areas of this region, the majority of the housing units are used seasonally and at least 20% of all workers are employed in tourism-related industries.

Table 3.10: Seasonal Housing and Tourism in the Upper Lake Michigan Coastal Region

County	Population	Housing Units	%Seasonal	% Employed in Tourism
Brown County	226,778	90,199	0.50%	7.30%
Manitowoc County	82,887	34,651	1.50%	6.30%
Marinette County	43,384	26,260	28.90%	8.40%
Oconto County	35,634	19,812	24.40%	7.30%

Source: Wisconsin SCORP Regional Demographic Profile for the Upper Lake Michigan Coastal Region

Table 3.11: Changes in Seasonal Housing Units in the Upper Lake Michigan Coastal Region 1950-2000

	Number of Seasonal Housing Units						Percent Seasonal		
	1950	1960	1970	1980	1990	2000	1960	1980	2000
Brown County	2,712	676	490	407	346	414	2.0%	0.7%	0.5%
Manitowoc County	1,304	464	442	664	557	518	2.0%	2.2%	1.5%
Marinette County	1,588	2,739	3,700	7,442	8,532	7,586	20.0%	33.0%	28.9%
Oconto County	2,966	3,061	2,131	6,272	6,666	4,837	29.0%	37%	24.4%

Source: Wisconsin SCORP Regional Demographic Profile for the Upper Lake Michigan Coastal

Table 3.12: Natural Amenities, Recreation, and Population Change

	Land Cover		Population Change			Housing Change		
	% Forest	% Wetland	1970-1990	1990-2000	2000-2004	1970-1990	1990-2000	2000-2004
Marinette County	53.1%	22.9%	13.2%	7.0%	1.9%	65.6%	2.4%	5.4%
Oconto County	38.9%	21.2%	18.3%	17.9%	5.7%	57.6%	5.2%	9.0%
Brown County	7.4%	7.3%	23.0%	16.5%	4.9%	65.4%	20.7%	8.7%
Manitowoc County	12.1%	13.3%	-2.3%	3.1%	1.7%	25.3%	8.8%	4.3%

Source: Wisconsin SCORP Regional Demographic Profile for the Upper Lake Michigan Coastal

4. Economic Trends

Marinette County is comprised mainly of tourism and manufacturing sectors. One-third of the jobs in Marinette County come from the manufacturing sector, which has remained fairly consistent over the last five years. However, there is a disjunct between the fastest growing economic sectors and sectors that expect the most employment opportunities. There are fewer positions with the fastest growing economic sectors (e.g. computer technologies), which offer higher wages yet are easily transported to other regions of the state and country. Most job openings are low-wage service-sector jobs, which have the most openings.

33% of the employees in Marinette County are employed in factories compared with 24% statewide. The service industry (24%) and retail trade (19%) account for the next largest work sectors in the county. The paper industry also plays a major role in the area's economy, providing mill, forest products and service-related employment. The County of Marinette is the largest non-manufacturing employer in the region. The large flowages of the PRSF play a major role in the Town of Stephenson's business economy, drawing tourists to the area from around the region and state. County-wide tourism contributed \$91.1 million in economic impacts in 2001.

In 2000, Marinette County had 26,260 housing units. The Census Bureau reports 28% of housing units are used for seasonal, recreational or occasional use. Within the Town of Stephenson this number increases to 62% of all housing units used for these purposes. Since the County's economy hinges predominately on seasonal use, Marinette County experiences slightly higher poverty rates (+2%) higher than the statewide average.

III. Property Capabilities, Limitations and Opportunities

From a regional perspective, there are a number of elements to consider in the relationship of this property to the local setting. Listed below are elements that define the PRSF and its' context within the region.

A. Mandatory Management Requirements

1. State Forest Designation

The Regional and Property Analysis presented here is an important step in the process of developing a master plan for the PRSF. The Department's master planning rule (Wisconsin Administrative Code NR44) identifies that this analysis and the final property master plan must meet the statutory purpose of the property's designation. In this case, the property is a state forest as defined in Wisconsin Statutes 28.

State forests such as the Peshtigo River State Forest State Forest are an important part of the Department's broader mission to provide leadership in "all matters pertaining to forestry within the jurisdiction of the state...and advance the cause of forestry within the state" (§28.01). In order to define this mission, the purposes and benefits of state forests are outlined in the following language of 28.04 (2):

- (a) The department shall manage the state forests to benefit the present and future generations of residents of this state, recognizing that the state forests contribute to local and statewide economies and to a healthy natural environment. The department shall assure the practice of sustainable forestry and use it to assure that state forests can provide a full range of benefits for present and future generations. The department shall also assure that the management of state forests is consistent with the ecological capability of the state forest land and with the long-term maintenance of sustainable forest communities and ecosystems. These benefits include soil protection, public hunting, protection of water quality, production of recurring forest products, outdoor recreation, native biological diversity, aquatic and terrestrial wildlife, and aesthetics. The range of benefits provided by the department in each state forest shall reflect its unique character and position in the regional landscape.
- (b) In managing the state forests, the department shall recognize that not all benefits under par. (a) can or should be provided in every area of a state forest.
- (c) In managing the state forests, the department shall recognize that management may consist of both active and passive techniques.

2. Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission (FERC) is the federal agency with jurisdiction over interstate electricity sales, wholesale electric rates, hydroelectric licensing, natural gas pricing, and oil pipeline rates. FERC is an independent regulatory agency within the United States Department of Energy.

The PRSF is required to meet the licensing requirements of FERC⁵ for several projects on the Peshtigo River: Caldron Falls, High Falls, Johnson Falls, Sandstone Rapids, and Potato Rapids. The WDNR and WPSC have individual roles and responsibilities for managing the Peshtigo River Flowages. However, each is dependent upon the other to successfully fulfill its management objectives. WPSC and the WDNR will continue to consult regularly to maintain clear understanding of their management roles and objectives and cooperative approaches through lease or land use agreements. Through the PRSF Master Plan the WDNR will implement a multi-use resource program and provide compatible recreation. Under the authority of the FERC license, WPSC will continue to implement the required and approved flowage operation and related environmental and recreational plans. The WDNR may petition FERC if any major issues arise. The WDNR will be maintaining a 200' buffer zone along the Peshtigo River shoreline throughout the forest.

B. Ecological Capability

- The region contains significant acreage in public ownership, primary County and Federal (National Forests) forest lands. County and National forest provide recreation and forest management activities. Much of the area of the adjacent County forests are managed for aspen or are in red pine plantations. From an ecological perspective, this may reduce the necessity to manage for early successional community types that produce large volumes of wood products within the PRSF, and allow for the management of natural communities (e.g. barrens communities) and seral stages of natural communities (e.g. old growth) that may be rare in the region. This will enhance the habitat available for wildlife and plant species that require those types for at least part of their life cycle.
- From a forest management standpoint, the relatively small size of the property and the poor, sandy soils limit the amount and type of forest production that can be realized. Where appropriate, certain species (e.g. white, red or jack pines) would potentially be more productive than scrub oak on sites where it currently occurs.
- Riparian areas are common on the property and warrant consideration. The core concerns in the riparian zones are the need for coarse woody debris for stream health, thermal protection given by shade trees, and the prevention of sedimentation and erosion in the shoreline area.
- The property has some unique habitats and a few threatened and endangered species.
- Although remnant areas of Pine and Oak Barrens are found in the PRSF, they are generally degraded and overgrown. The sandy soils would likely support pine and oak barrens.
- The use of fire to maintain natural communities could be challenging due to the size and long linear shape of the property, as well as the proximity to private lands.

⁵ See *Wisconsin Public Service Corporation Peshtigo River Projects* (1998).

- Along the slopes of the Peshtigo River, there are good examples of Northern Dry-mesic forests, interspersed with other forest and wetland types. There are several spring seeps that have created some interesting plant assemblages in this area.
- Deer populations are high in the area. Deer control in the forest will be essential to avoid a long-term threat to forest reproduction and composition, including the quality of the understory habitat.
- Development pressures continue to grow within the region. Stephenson Township is the fastest growing township within Marinette County. This has profound implications in the management of the property, recreational use and perceived values of property usage. With over 60% of township residential homes in seasonal use, perceived values will differ than that of permanent residents. These value differences will revolve around recreation and land management issues.

C. Recreational Resources, Use and Trends

- Recreational opportunities are impacted by the size and shape of the property, as well as the poor soils. Recreational motorized vehicle use is particularly limited by these factors, although snowmobiling is currently a permitted use. The poor, sandy soils limit recreation and facility development. These soils require good site planning so that operations and maintenance costs do not become excessively high.
- Two of three largest waterbodies within the watershed are Caldron and High Falls. There are very few large bodies of water within the Upper Green Bay watershed. As a result, these two flowages offer a variety of waterbased recreational activities. These large waterbodies tend to define the local recreational setting. The river and the flowages tend to draw users to the resource.
- Undeveloped shoreline – There are few large lakes in the region. Lake Noquebay, the largest waterbody in the watershed, is heavily developed. The Caldron Falls and High Falls Flowages' miles of undeveloped, scenic shoreline are a highly unique feature and a major attraction to the area.
- For recreationists the large public land base offers a large "field of play" for many recreational pursuits. Due to the PRSF's proximity to Governor Thompson State Park, County and National forest and its accessibility to large urban areas to the south should make it a prime destination in the region.
- Motorized recreation is popular with extensive trail networks. There are over 1,700 miles of snowmobile and ATV trails within a four county area around the forest. Statewide, and within this region, land based motorized recreation continues to increase in demand. There are limited opportunities for regional ATV connector trails. Soils may limit opportunities for adequate trails.

- All types of water recreation are extremely popular and the flowage and river offer unique opportunities. WPSC surveys indicate that water-based recreation is a popular activity. On summer weekends boat landings usually are over capacity in certain areas, and in the winter months ice fishing and snowmobiling are popular along the flowages.
- Swimming is popular on the flowages and it occurs at various locations, primarily at boat access sites. There is only one developed public beach (Twin Bridges County Park) and one planned on the State Park.
- Shortage of horse trails in the region – the availability for public horse trails in the region does not match the demand. The demand is especially high for trails and campground that are readily accessible to riders from the Green Bay and Fox Valley areas.
- Rustic and modern camping are popular within the region - a number of public and private camping facilities are available within the region. There currently more than 2,400 public and private campsites within a 50 mile radius of the state forest. In the immediate High Falls/Caldron Falls area there are several modern private campgrounds and 62 sites at the county-operated Twin Bridges Campground on the forest. With the addition of a new 100 unit campground at GTSP (with 70 rustic sites and 30 electric sites) the modern camping demand in the local PRSF area should be met for some time.
- Recreation-based tourism is growing. The region is popular with in-state and out-of-state tourists. In fact, tourism sensitive economic sectors have seen a steady growth in output over the last decade within the northeast region of the State.
- Other recreational activities projected to increase within the region include camping, bicycling, canoe, and kayaking, golf, wildlife viewing and to a lesser extent fishing and mountain biking

D. Overview of Regional Land Use and Ownership Patterns

- The PRSF does offer opportunities for natural connectivity between these larger blocks of public lands. The PRSF lies at the edge of vast County and Federal Forest lands - over one million acres of public forestland surrounds the region. Locally, the PRSF is generally surrounded by private ownership, but does border both County and National Forest.
- The state forest is a long, linear property, and state ownership is discontinuous. This offers special challenges and limitations for recreation management as well as forest management.
- Development pressures continue to grow within the state forest area- The Stephenson Township is the fastest growing township within Marinette County. Over 60% of residential homes in the town are seasonal.

IV. Findings and Conclusions

The PRSF is a property that is highly suitable for providing a range of recreation opportunities while enhancing natural communities and habitats, and providing forest products. Water based amenities abound, and the flowages and river are already a large draw to recreational activities. Overall, recreational demand within the PRSF area is expected to increase.

The river corridor and adjacent community types are vital components of the property both from a recreational point of view but also as an ecological resource for native species. Every consideration should be given to maintaining this unique and valuable resource.

The Peshtigo River corridor has the potential to provide a virtually uninterrupted link between the vast forests of the Nicolet National Forest and Marinette County, with the shores of Lake Michigan. Many of the important sites identified within the PRSF are in close proximity to the river, which presents an important consideration during planning deliberations.

Due to the generally poor, sandy soils, the PRSF is not an optimal place for timber production. That being said, the PRSF does offer some opportunities for timber management. Much of the areas that are currently in unproductive scrub oak could be converted to white, red, or jack pine, or other hardwood production.

Although opportunities are limited, larger blocks of contiguous natural communities with embedded, undeveloped lakes, streams, and wetlands should be maintained. Priority should be given to types (forest communities, open communities, wetland communities, and water bodies etc); that are rare locally, regionally, and/or statewide; or are outstanding due to their size, diversity, value to rare species, or recovery from past disturbance.

Given all of these points, expansion of the forest boundaries could enhance connectivity between public lands, reduce some of the challenges and limitations for management and recreation, and buffer against problems associated with development adjacent to natural communities.

There are many opportunities and challenges to be met when planning for a state forest. Considering the property, the region, and the role the property plays in a regional context will help shape and guide the master planning process. This analysis provides baseline information, but as new information becomes available, it will be incorporated into the planning process as part of a dynamic and responsive tool used both by planners and property managers. The assessment of property and the regional provide a comprehensive view of the current conditions. The analysis of the property and region identifies trends, issues and opportunities related to the property in a regional context, providing the basis for future decisions.

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